

*CLAIM AMENDMENTS*

1. (Currently Amended) ~~Material~~A material for the treatment of gaseous media ~~comprising containing~~ volatile organic compounds, ~~this the~~ porous material presenting an adsorption capacity of about 20 to 30% with respect to its dry weight and comprising about 47 to 52 wt% of a composite structure of silicon and carbon, about 12 to 20 wt% carbon, about 5 to 7 wt% hydroxyl, and about 1 to 2 wt% oxygen.

2. (Currently Amended) ~~Material~~The material according to Claim 1, comprising, in a peripheral volume ~~(21)~~ corresponding to essentially one-third of ~~the a~~ total volume of the material, about 75 to 85% ~~porosities (22)~~ porosity, ~~whose and having pores with~~ dimensions ~~are~~ between 10 and 50 Å and, in ~~the a~~ remaining central volume ~~(23)~~, about 80 to 90% cavities ~~(24)~~, ~~whose having dimensions are~~ between about 200 Å and 2 µm.

3. (Currently Amended) ~~Material~~The material according to Claim 1 ~~or 2, whose~~ having a specific surface is of between 1200 and 2200 m<sup>2</sup>/g.

4. (Currently Amended) ~~Material~~The material according to ~~any of Claims Claim~~ 1-3, comprising about 20 wt% aluminum oxides and about 5 wt% iodides.

5. (Currently Amended) ~~Material~~The material according to ~~any of Claims Claim~~ 1-4, ~~whose having a relative humidity is~~ lower than 2% of its dry weight.

6. (Currently Amended) ~~Process~~A process for the treatment of a gaseous medium containing volatile organic compounds, consisting of directing a flow of ~~said the~~ gaseous medium over a porous material according to ~~any of Claims Claim~~ 1-5, to cause adsorption of ~~this the~~ flow, which penetrates ~~the porosities (22) pores and the cavities (24)~~ of the material ~~(20) then so~~ absorption of ~~said the~~ flow, during which a chemical reaction occurs between the volatile organic compounds of ~~said the~~ flow and the material ~~itself~~, to transform the volatile organic compounds into nontoxic gases, ~~particularly CO<sub>2</sub> or SO<sub>2</sub>~~.

7. (Currently Amended) ~~Process~~The process according to Claim 6, in which ~~the~~ contact time between the gaseous flow and the material is between 0.08 and 0.12 sec.

8. (Currently Amended) ~~Process~~The process for obtaining a porous material according to ~~any of Claims Claim 1-5, consisting of comprising:~~

- preparing a base constituent-(10) of ~~the clay-type~~ comprising about 30 wt% of a clay with a particle size greater than 180  $\mu\text{m}$  and about 70 wt% of a clay with a particle size between 10 and 20  $\mu\text{m}$ ,
- impregnating ~~this the~~ base constituent-(10) with an aqueous solution-(19) comprising about 10% by volume of acetic acid, between 5 and 10% by volume of citric acid, and between 15 and 20% by volume of peroxide, the volume of the solution-(19) being essentially equal to the volume of the base constituent-(10),
- pretreating the base constituent-(10) impregnated with ~~said the aqueous~~ solution (10) by mixing it at a first ~~predetermined~~ speed to create a porous structure,
- mixing, under a pressure between 2 and 10 bar, the ~~pretreated base~~ constituent (11), after pretreating with an acidified liquid-(14) with a strong oxidizing potential, at a second speed lower than the first speed, to cause the acidified liquid-(14) to penetrate the pretreated constituent-(11) and to form a gel-(15), the ~~quantity of~~ pretreated constituent (11) being between 42 and 48% of the total volume mixed, while the ~~quantity of~~ liquid (14) is between 58 and 52% of the total volume mixed;
- mixing ~~said the gel-(15) with complementary products (16) including~~ a solution with a strong oxido-reductive potential, which represents about 10% of the total volume, a mixture of carbon and alumina representing about 12 to 15% of the total volume, and calcium sulfate representing about 2% of the total volume;
- drying the ~~resulting mixture produced by ultrasound treatment of the material which has been mixed and linearly transferred,~~ and
- pressing the ~~dried material (18) mixture,~~ after drying, under a pressure between 8 and 10 bar.

9. (Currently Amended) ~~Process~~The process according to Claim 8, implemented continuously.

10. (Currently Amended) ~~Process~~The process according to Claim 8 ~~or 9, also consisting of including~~ heating the base constituent-(10) impregnated with the aqueous solution-(19) ~~at the time of pretreatment in pretreating,~~ at a temperature between 200 and 250°C.

11. (Currently Amended) ~~Process~~The process according to ~~any of Claims~~ Claim 8-10, consisting of the emission of including applying ultrasound waves at the time of ~~pretreatment~~ pretreating, at a unit power of 2000 W and with an amplitude of 15 to 30  $\mu\text{m}$ .

12. (Currently Amended) ~~Process~~The process according to ~~any of Claims 1-8~~ Claim 8, consisting of carrying out including, at the time of ~~pretreatment~~ in pretreating, ~~another mixing operation~~ at a third speed, lower than the first and second speeds, to enlarge the cavities and ~~porosities of the resulting structure~~ pores.

13. (Currently Amended) ~~Process~~The process according to ~~any of Claims~~ Claim 8-12, consisting of including filtering the a liquid (12) resulting from the ~~pretreatment of~~ pretreating the preimpregnated base constituent (10).

14. (Currently Amended) ~~Process~~The process according to ~~any of Claims~~ Claim 8-13, in which the acidified liquid associated with the pretreated constituent (11) comprises about 10% by volume of a solution with a strong oxidizing potential.

15. (Currently Amended) ~~Process~~The process according to ~~any of Claims~~ Claim 8-14, in which including mixing the ~~pretreated base constituent (11)~~, after pretreating, and the acidified liquid (14) are mixed while being heated to a temperature between 90 and 120°C.

16. (Currently Amended) ~~Process~~The process according to ~~any of Claims~~ Claim 8-15, in which the including mixing of the ~~gel (15) and the additional products (16)~~ takes place at a temperature between 70 and 80°C.

17. (Currently Amended) ~~Process~~The process according to ~~any of Claims~~ Claim 8-16, in which wherein the treatment by ultrasound waves, to dry the mixture ~~(17)~~ is carried out at a length of 20 to 30 cm, under a specific output of 3- to 5000 W, an amplitude of 15 to 60  $\mu\text{m}$ , and a frequency of about 20 MHz.

18. (Currently Amended) ~~Process~~The process according to ~~any of Claims~~ Claim 8-17, in which including drying the ~~material (18)~~ is dried mixture under a partial vacuum of 120 to 150 mbar and at a temperature between 90 and 100°C.

19. (Currently Amended) ~~Process~~The process according to ~~any of Claims Claim 8-18~~, comprising ~~a final stage of extrusion of~~ extruding the material (18) mixture, after drying.

20. (Currently Amended) ~~Device~~An apparatus for implementation of the process according to ~~any of Claims Claim 8-19~~, comprising:

- an impregnator ~~(1)~~ including a first mixer ~~(110)~~ rotating at a speed between 1200 and 1400 rpm to form a first mixture ~~(11)~~,
- a first reactor ~~(2)~~ including a second mixer ~~(210)~~ rotating at a speed between 800 and 1000 rpm to accomplish mixing under pressure between 2 and 10 bar, to create a second mixture ~~(15) of the as a gel type,~~
- a second reactor ~~(3)~~ including a mixer ~~(310)~~ to create a third mixture ~~(17)~~,
- a device ~~(320, 321)~~ for linear transfer of ~~said the~~ third mixture ~~(17)~~ and at least one ultrasound device ~~(305)~~ delivering a power of 3 to 5000 W, on at least one part of ~~the~~ a trajectory of said third mixture ~~(17)~~, and
- a high-pressure extrusion device ~~(4)~~.

21. (Currently Amended) ~~Device~~The apparatus according to Claim 20, in which the impregnator ~~(1)~~ includes a heating device ~~(101)~~ for heating to a temperature between 200 and 250°C, as well as a device ~~(104)~~ for emitting ultrasound waves.

22. (Currently Amended) ~~Device~~The apparatus according to Claim 20 ~~or 21, in which including a filtration device (129) for filtering the a liquid-evacuated extracted from the impregnator is associated with the impregnator (1).~~

23. (Currently Amended) ~~Device~~The apparatus according to ~~any of Claims Claim 20-22, in which wherein~~ the impregnator ~~(1)~~ includes ~~another a second mixer (121)~~ rotating at a speed between 500 and 800 rpm.

24. (Currently Amended) ~~Device~~The apparatus according to ~~any of Claims Claim 20-23, in which wherein~~ the first reactor ~~(2)~~ ~~advantageously~~ includes a heating device ~~(201)~~ heating to a temperature between 90 and 120°C.

25. (Currently Amended) ~~Device~~The apparatus according to any of Claims Claim 20-24, in which wherein the second reactor ~~(3)~~ advantageously includes a heating device ~~(301)~~ for heating to a temperature between 70 and 80°C.

26. (Currently Amended) ~~Device~~The apparatus according to any of Claims Claim 20-25, in which the linear transfer device of the second reactor (3) is advantageously ~~made up of~~ includes a double screw ~~(320) whose~~ having a rotation speed ~~is~~ between 5 and 150 rpm.

27. (Currently Amended) ~~Device~~The apparatus according to any of Claims Claim 20-26, in which wherein the extrusion device ~~(4)~~ includes a variable screw ~~(401)~~ which subjects the material ~~(18)~~ from the second reactor ~~(3)~~ to a pressure between 8 and 10 bar.